CHROMIUM STATISTICS

By Thomas G. Goonan and John F. Papp

[All values in metric tons (t), contained chromium unless otherwise noted]

Year	Primary production	Secondary production	Imports	Exports	Stocks	Chromite ore reported consumption	Chromium ferroalloy and metal reported consumption	Apparent consumption	Unit value ($/t)	Unit value (98$/t)	World production
1900	43		5,510					5,550	55.00	1,100.00	15,900
1901	112		6,320					6,430	57.00	1,100.00	27,100
1902	96		12,400					12,500	47.00	880.00	25,600
1903	46		7,210					7,250	42.00	760.00	28,600
1904	38		7,610					7,650	46.00	830.00	35,500
1905	7		17,100					17,100	42.00	770.00	43,200
1906	33		13,700					13,700	41.00	740.00	48,100
1907	88		13,200					13,300	37.00	650.00	33,600
1908	109		8,760					8,870	40.00	720.00	20,100
1909	182		12,500					12,600	37.00	670.00	32,300
1910	63		12,100					12,200	34.00	600.00	32,500
1911	37		12,000					12,000	35.00	610.00	24,300
1912	61		17,300					17,300	30.00	500.00	36,800
1913	78		20,700					20,800	30.00	500.00	44,100
1914	180		25,500					25,700	28.00	453.00	47,000
1915	1,000		24,000					25,100	32.00	521.00	55,600
1916	14,300		36,400					50,800	43.00	634.00	84,300
1917	13,300		22,600					36,000	49.00	624.00	78,800
1918	25,100		31,500					56,600	92.00	995.00	93,600
1919	1,550		19,600					21,100	72.00	676.00	51,300
1920	763		48,400					49,100	41.00	331.00	51,500
1921	86		26,000					26,100	25.00	231.00	40,100
1922	108		28,600					28,700	26.00	254.00	41,900
1923	69		40,700					40,700	28.00	262.00	61,600
1924	88		37,500					37,600	29.00	281.00	87,500
1925	33		47,500					47,500	26.00	238.00	92,300
1926	43		68,000					68,100	25.00	231.00	109,000
1927	61		70,000					70,000	25.00	234.00	120,000
1928	201		68,600	1,380				67,400	25.00	239.00	136,000
1929	82		100,000	927				99,600	27.00	254.00	191,000
1930	24		103,000	781				102,000	34.00	336.00	168,000
1931	82		71,500	698				70,900	46.00	497.00	115,000
1932	47		30,600	978				29,700	53.00	637.00	89,800
1933	257		35,700					36,000	40.00	504.00	123,000
1934	112		57,800					57,900	39.00	481.00	186,000
1935	157		80,900					81,100	45.00	530.00	235,000

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1936	82		98,300					98,400	45.00	531.00	319,000
1937	707		172,000					173,000	43.00	484.00	385,000
1938	248		114,000					114,000	43.00	494.00	342,000
1939	1,100		93,900					95,000	41.00	477.00	358,000
1940	811		210,000			157,000		211,000	42.00	485.00	437,000
1941	3,880		310,000	519		220,000		313,000	41.00	451.00	498,000
1942	30,700		280,000	1,290		239,000		309,000	51.00	509.00	609,000
1943	43,600		251,000	8,540		262,000		286,000	65.00	618.00	545,000
1944	12,400		227,000	625		232,000		239,000	70.00	651.00	419,000
1945	3,800		250,000	4,250		220,000	89,100	249,000	70.00	641.00	318,000
1946	1,120		206,000	2,090	87,700	197,000	75,600	205,000	56.00	463.00	352,000
1947	258		308,000	3,120	105,000	213,000	70,000	322,000	67.00	489.00	520,000
1948	985		427,000	5,140	160,000	232,000	75,700	477,000	81.00	546.00	640,000
1949	118		334,000	2,280	194,000	219,000	54,100	366,000	76.00	521.00	645,000
1950	110		374,000	963	160,000	258,000	91,200	338,000	74.00	503.00	723,000
1951	1,920		394,000	932	169,000	321,000	120,000	404,000	80.00	505.00	863,000
1952	5,800		453,000	1,310	196,000	316,000	160,000	485,000	95.00	585.00	1,160,000
1953	16,000		604,000	822	269,000	354,000	175,000	692,000	110.00	672.00	1,160,000
1954	44,500		387,000	3,240	334,000	241,000	114,000	492,000	89.00	536.00	1,010,000
1955	41,700		493,000	5,370	299,000	423,000	185,000	492,000	97.00	591.00	1,090,000
1956	56,500		595,000	6,050	387,000	499,000	162,000	682,000	103.00	619.00	1,250,000
1957	45,200		640,000	1,640	499,000	480,000	132,000	796,000	114.00	659.00	1,390,000
1958	39,100		355,000	1,830	471,000	332,000	106,000	364,000	115.00	650.00	1,150,000
1959	28,600		475,000	9,050	544,000	359,000	153,000	568,000	141.00	788.00	1,170,000
1960	29,100		387,000	14,100	508,000	323,000	137,000	365,000	104.00	573.00	1,330,000
1961	22,300		369,000	8,810	481,000	317,000	147,000	357,000	82.00	446.00	1,260,000
1962		35,300	404,000	4,530	503,000	300,000	150,000	456,000	86.00	462.00	1,320,000
1963		38,900	396,000	6,120	483,000	323,000	169,000	409,000	72.00	381.00	1,170,000
1964		40,900	419,000	4,300	388,000	396,000	208,000	361,000	71.00	373.00	1,250,000
1965		55,400	466,000	3,390	352,000	440,000	221,000	481,000	87.00	448.00	1,440,000
1966		54,700	590,000	10,600	410,000	404,000	233,000	692,000	90.00	453.00	1,320,000
1967		47,300	390,000	11,200	391,000	383,000	227,000	408,000	92.00	448.00	1,370,000
1968		58,000	352,000	21,100	309,000	371,000	208,000	306,000	99.00	464.00	1,480,000
1969		94,100	351,000	29,600	260,000	398,000	218,000	366,000	94.00	418.00	1,600,000
1970		74,200	427,000	29,600	256,000	394,000	194,000	455,000	97.00	409.00	1,820,000
1971		78,200	419,000	16,100	350,000	308,000	180,000	567,000	138.00	556.00	1,930,000

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1972		67,500	400,000	14,500	307,000	320,000	217,000	401,000	168.00	654.00	1,830,000
1973		70,800	355,000	18,900	219,000	389,000	286,000	304,000	182.00	668.00	2,010,000
1974		85,100	396,000	13,600	204,000	398,000	327,000	431,000	228.00	755.00	2,240,000
1975		44,700	529,000	49,700	336,000	232,000	183,000	645,000	488.00	1,480.00	2,490,000
1976		65,400	474,000	46,800	358,000	262,000	225,000	503,000	435.00	1,245.00	2,550,000
1977		65,400	458,000	63,700	428,000	254,000	244,000	518,000	393.00	1,058.00	2,830,000
1978		60,900	424,000	25,700	398,000	250,000	270,000	418,000	390.00	975.00	3,280,000
1979		65,500	382,000	26,800	283,000	295,000	294,000	293,000	451.00	1,014.00	2,800,000
1980		59,100	415,000	31,400	221,000	233,000	229,000	360,000	573.00	1,134.00	2,970,000
1981		66,000	458,000	39,200	240,000	209,000	230,000	490,000	632.00	1,132.00	2,730,000
1982		62,000	212,000	11,500	187,000	135,000	143,000	202,000	563.00	951.00	2,540,000
1983		75,900	239,000	11,900	166,000	83,400	208,000	274,000	651.00	1,065.00	2,460,000
1984		81,400	313,000	32,700	115,000	136,000	210,000	313,000	724.00	1,137.00	2,410,000
1985		86,100	292,000	38,300	106,000	143,000	188,000	323,000	691.00	1,047.00	2,700,000
1986		85,100	348,000	36,200	102,000	107,000	191,000	386,000	636.00	946.00	2,910,000
1987		99,000	320,000	10,600	109,000	142,000	231,000	402,000	664.00	952.00	2,940,000
1988		124,000	447,000	15,400	136,000	160,000	243,000	569,000	809.00	1,114.00	3,870,000
1989		97,300	379,000	26,400	138,000	163,000	214,000	436,000	900.00	1,184.00	4,200,000
1990		101,000	346,000	15,000	125,000	120,000	226,000	400,000	814.00	1,016.00	3,890,000
1991		96,100	309,000	16,500	117,000	115,000	208,000	356,000	873.00	1,045.00	4,000,000
1992		102,000	324,000	16,100	117,000	116,000	218,000	390,000	825.00	958.00	3,330,000
1993		92,000	329,000	18,300	103,000	109,000	218,000	371,000	664.00	749.00	2,790,000
1994		99,000	272,000	31,000	101,000	99,400	206,000	320,000	702.00	772.00	3,120,000
1995		112,000	415,000	24,000	80,200	108,000	193,000	452,000	1,086.00	1,161.00	4,210,000
1996		98,400	361,000	47,400	73,800	87,000	190,000	377,000	1,011.00	1,051.00	3,470,000
1997		120,000	349,000	27,200	70,900	108,000	225,000	405,000	977.00	992.00	4,090,000
1998		105,000	383,000	55,000	59,300	83,600	192,000	394,000	817.00	817.00	4,050,000
1999		118,000	475,000	53,300	53,500		216,000	534,000	648.00	632.00	4,190,000

Chromium Worksheet Notes

Data Sources
The sources of data for the chromium worksheet are the mineral statistics publications of the U.S. Bureau of Mines and the U.S. Geological Survey—Minerals Yearbook (MYB) and its predecessor, Mineral Resources of the United States (MR), and Mineral Commodity Summaries (MCS) and its predecessor, Commodity Data Summaries (CDS). The years of publication and corresponding years of data coverage are listed in the Bibliography and References sections below. Blank cells in the worksheet indicate that data either were not available or were withheld from publication because they are proprietary.

Primary Production
U.S. chromium primary production data report the amount of contained chromium in chromite ore mined in the United States. The United States has economically marginal chromite ore deposits that can be mobilized under emergency conditions. U.S. chromite ore production has been intermittent. Production was last reported in 1961. Government programs, including World War I (1916–18), World War II (1941–45), and stockpile building (1951–61) were responsible for the greatest production from U.S. chromium resources.

Secondary Production
U.S. chromium secondary production data report the amount of chromium recovered from stainless steel scrap. These data were first reported in 1962. Stainless steel was not produced in large quantities until the post World War II era, so there are in reality only about 17 years of missing secondary chromium production data (1945–62).

Imports
U.S. chromium import data report the amount of contained chromium imported into the United States as chromite ore or in various value-added products—chromium chemicals, ferroalloys, and metal and chromite refractories. Import data exclude steel mill and manufactured products that contain chromium–alloyed steel and castings. Over the years, the U.S. has imported most of its chromium requirements, either as chromite ore, to be converted domestically into value-added products or as the value-added products themselves.

Exports
U.S. chromium export data report the amount of contained chromium exported from the United States as chromite ore or in value-added products. Compared to imports, exports have always been much less, until recently, less than 10 percent of imports. Chromium export data were not reported prior to 1941. Export data exclude steel mill and manufactured products that contain chromium-alloyed steel and castings.

Stocks
U.S. chromium stocks data report the amount of contained chromium in reported industry stocks as of December 31 of each year, as reported in MYB. Stocks were not reported before 1947. From 1947 through 1958, industry stocks reflect only chromium contained in chromite ore. After 1958, industry stocks include chromium contained in both chromite ore and chromium ferroalloys and metal.

U.S. Government stocks, while extensive (about 1 million metric tons contained chromium on average), are not reported in this worksheet. Throughout the 1950's, U.S. chromite mine production was added directly to the stockpile, and intermittently this chromite was converted to ferroalloys and held within the stockpile as the upgraded product. The exclusion of U.S. Government stocks means that material added to the stockpile (mostly throughout the 1950's) appears to have been part of apparent consumption while material removed from the stockpile (starting in the 1990's) does not appear as part of apparent consumption. Since U.S. Government chromium stocks were only partially reported, they are not included here.

Reported Consumption
U.S. chromium reported consumption data include reported chromite ore consumption and reported chromium ferroalloy and metal consumption, presented separately in the table. Reported consumption of chromite ore began in 1940 and ended in 1998. Reported consumption of chromium ferroalloys and metal started in 1945.

Apparent Consumption
Apparent consumption, as defined here, is the sum of production (primary plus secondary), plus net imports (imports minus exports), plus stock change (beginning-of-year minus end-of-year). Chromium apparent consumption is apparent consumption measured in contained chromium. Apparent consumption reported here is calculated from the data series presented here. As one goes back in time, certain of the parameters that go into the calculation of apparent consumption drop out due to lack of reported data. For example, secondary production drops out in 1962; stock adjustments drop out in 1947; and exports drop out between 1933 and 1940 then stop before 1928.

Using general category names like production, imports, exports, and stocks, hides the fact that there have been changes in which materials have been accounted for over the time period. For example, chromite ore contributes to imports over the entire time period while chromium ferroalloy imports were not reported before 1911 and exports were not reported before 1913. Chromite consumer

stocks contribute to stocks over the entire time period; however, chromite producer stocks were never reported. Chromium ferroalloy and metal consumer stocks were not reported before 1945. Producer chromium ferroalloy and metal stocks were not reported before 1956 or after 1998.

Unit Value ($/t)
Unit value for chromium is calculated on an annual basis from the U.S. dollar (expressed as current dollars) value of imports divided by chromium contained in those imports. Estimation of unit value is based on import data because the greatest part of apparent consumption is imported. The unit values displayed were calculated based on U.S. chromite ore, and chromium chemical, ferroalloy, and metal import data.

Unit Value (98$/t), Adjusted
The Consumer Price Index conversion factor, with 1998 as the base year, is used to adjust unit value in current dollars to the unit value in constant 1998 dollars.

World Production
World mine production data report contained chromium of world chromite ore mine production.

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